WHAT IS CLAIMED IS:

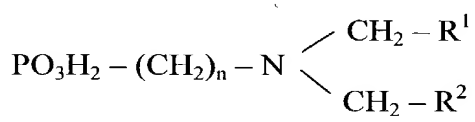
1. A chemical-mechanical polishing system for a substrate comprising:

(a) a liquid carrier,

(b) a polishing pad and/or an abrasive,

(c) a per-type oxidizer, and

(d) an additive of the formula



wherein R^1 is a phosphono group or a carboxyl group, R^2 is a phosphono group or a carboxyl group, and n is an integer from 1 to 50.

2. The chemical-mechanical polishing system of claim 1, wherein R^1 and R^2 are phosphono groups.

3. The chemical-mechanical polishing system of claim 1, wherein R^1 and R^2 are carboxyl groups.

4. The chemical-mechanical polishing system of claim 1, wherein both a polishing pad and an abrasive are present, and the abrasive is fixed on the polishing pad.

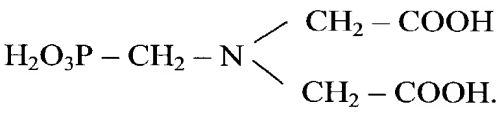
5. The chemical-mechanical polishing system of claim 1, wherein an abrasive is present in particulate form and is suspended in the carrier.

6. The chemical-mechanical polishing system of claim 5, wherein the abrasive is a metal oxide.

7. The chemical-mechanical polishing system of claim 6, wherein the abrasive is silica.

8. The chemical-mechanical polishing system of claim 1, wherein the carrier is water.

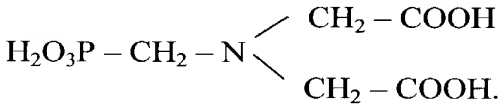
9. The chemical-mechanical polishing system of claim 3, wherein the additive is



or the salt thereof.

10. The chemical-mechanical polishing system of claim 1, wherein the per-type oxidizer is hydrogen peroxide.

11. The chemical-mechanical polishing system of claim 1, wherein the carrier is water, both a polishing pad and an abrasive are present, the abrasive is a metal oxide, the per-type oxidizer is hydrogen peroxide, and the additive is



or the salt thereof.

12. A method of polishing a substrate comprising (a) contacting a substrate with the chemical-mechanical polishing system of claim 1, and (b) abrading at least a portion of the substrate to polish the substrate.

13. The method of claim 12, wherein the substrate is a semiconductor, rigid memory disk, or magnetic head.

14. The method of claim 12, wherein the substrate comprises nickel and phosphorous.

15. A method of polishing a nickel-containing substrate comprising (i) contacting the nickel-containing substrate with (a) a liquid carrier, (b) a polishing pad and/or an abrasive, (c) a per-type oxidizer, and (d) an additive selected from the group consisting of 1,2,4-triazole and piperazine, and (ii) abrading at least a portion of the nickel-containing substrate to polish the nickel-containing substrate.

16. The method of claim 15, wherein both a polishing pad and an abrasive are present, and the abrasive in fixed on a polishing pad.

17. The method of claim 15, wherein an abrasive is present in particulate form and is suspended in the carrier.

18. The method of claim 15, wherein the abrasive is a metal oxide.

19. The method of claim 18, wherein the abrasive is silica.

20. The method of claim 15, wherein the carrier is water.

21. The method of claim 15, wherein the per-type oxidizer is hydrogen peroxide.

22. The method of claim 15, wherein the additive is 1,2,4-triazole or the salt thereof.

23. The method of claim 15, wherein the additive is piperazine or the salt thereof.

24. The method of claim 15, wherein the nickel-containing substrate comprises nickel and phosphorous.